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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,238	08/18/2003	Paolo Mola	3816-51	3000
23117	7590	03/06/2006	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			COMPTON, ERIC B	
			ART UNIT	PAPER NUMBER
			3726	

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/642,238	Applicant(s) MOLA, PAOLO	
	Examiner Eric B. Compton	Art Unit 3726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/16/05</u> | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. **Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading.** If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

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2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 11, 13, 15, and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Regarding claim 1, the phrase "such as," in line 4 renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

5. Regarding claim 11, the phrase "i.e." (Latin for "that is"), in line 3 renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

6. Regarding claim 13, "tools (20)" lacks antecedent basis. Claim 1, for which it depends, may be performed with a single tool.

7. Regarding claim 15, the phrase "that of the type" in line 2 renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

8. Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim.

Claim Rejections - 35 USC § 102

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9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-3 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. 4,596,501 to Wu.

Regarding claims 1-3 and 21, Wu discloses a method for production of a rotor of a centrifugal compressor (see [0002]), produced from a monolithic disc (16), and that the disc is worked in a radial direction by at least one tool (12) of a numerical control machine (10), to remove shavings to produce radial cavities in the rotor.

11. Claims 1-3, 14-17, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0 992 310 A2 to Lowe (General Electric Co).

Regarding claims 1 and 21, Lowe discloses a method for production of a rotor (16) of a centrifugal compressor (see Col. 1, line 13), produced from a monolithic disc (10), and that the disc is worked in a radial direction by at least one tool (22) of a numerical control machine (20, see [0025] ("digitally programmable controller of the machine")), to remove shavings to produce radial cavities (30) in the rotor.

Regarding claims 2-3, see [0024]; Figure 1; claims 7-8.

Regarding claims 13-14, see [0046].

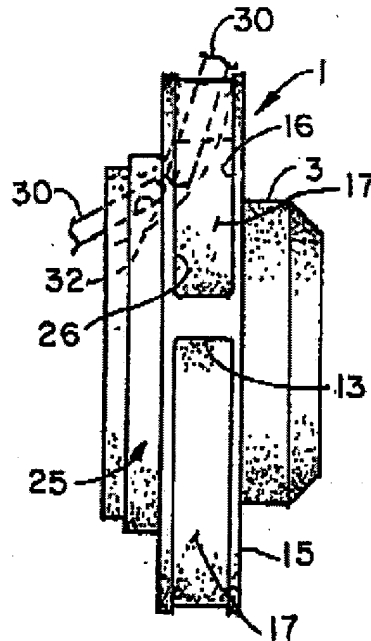
Regarding claim 15-16, Lowe discloses pockets (30) are formed; see also [0040] (discussing step-milling).

Regarding claim 17, the numerically control machine has five controlled axes.

See [0020].

12. Claims 1-5, 7-10, 15-17 and 20-21, are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. 5,438,755 to Giberson.

Regarding claims 1 and 21, Giberson discloses a method for production of a rotor (1) of a centrifugal compressor, produced from a monolithic disc (see Col. 3, line 38), and that the disc is worked in a radial direction by at least one tool (30) of a numerical control machine (see Col. 3, line 42), to remove shavings to produce radial cavities (16) in the rotor. See Figure 3, below:



Regarding claim 2-5, 7-10, and 15-17, the reference discloses:

In making the shrouded impeller 1, in this illustrative embodiment, a rough forged alloy steel blank is first turned and bored to the external profile of the impeller, approximately three percent (3%) oversize with respect to the finished impeller. Next, using a three dimensional CNC milling machine

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with conventional end mills, with ball end mills where appropriate, as much material as possible is removed from the passageways. The leading edge and trailing edge zones can usually be completed with this step, i.e., all material in the passageway in a direct line of sight from the outside diameter and from the eye is removed. A limitation to the depth of penetration in this step is the length to diameter dimension of the tools. Some material may be in the direct line of sight, but too deep to be efficiently removed in this step.

Col. 3, lines 37- 42; See *also* U.S. Pat. 4,579,705, Figures 7(b&d).

Regarding claims 13-14, see Col. 4, lines 3-5.

Regarding claim 20, the rotor is steel. See Col. 3, line 38.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe.

Lowe discloses the invention cited above, except for particulars claimed.

Regarding claim 20, it would have been obvious to one having ordinary skill in the art at the time of invention to have practiced the invention of Lowe by providing a steel blisk, in order to produce a rotor having sufficient tensile strength. See *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) (The selection of

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a known material based on its suitability for its intended use supported a *prima facie* obviousness determination).

15. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe or Giberson in view of U.S. Pat. 6,354,780 to Davis et al.

Lowe and Giberson disclose the invention cited above, except for providing a heat treatment and balancing.

Davis discloses forming a rotor for a compressor by machining. The reference notes providing a heat treatment "to improve material properties," Col 9, lines 25-26, and subsequent balancing procedure to minimize imbalance.

Regarding claims 18-19, it would have been obvious to one having ordinary skill in the art at the time of invention to have practiced the invention of Lowe or Giberson by providing a heat treatment and subsequent balancing steps, in light of the teachings of Davis, in order to provide improved operating characteristic, e.g., strength and balance.

16. Claims 6 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giberson in view of U.S. Pat. 6,112,133 to Fishman.

Giberson discloses the invention cited above, except for simultaneous use of first and second tools.

Fishman discloses a configurable CNC machine for milling planar and curvilinear surfaces. The program seeks to optimize machine operations to increase efficiency. "A special synchronization entry allows the operator to schedule operations to avoid tool collision from machines with multiple simultaneously operating tool-holding turrets and

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multiple spindles. The latter allows simultaneous cutting of the material from both ends of the part." Col. 7, lines 27-30.

Regarding claims 6 and 11-12, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have practiced the invention of Giberson using simultaneous tools, and provided a system to avoid superposition of tools, in light of the teachings of Fishman, in order to increase efficiency.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Compton whose telephone number is (571) 272-4527. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Jimenez can be reached on (571) 272-4530. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Eric B. Compton
Primary Examiner
Art Unit 3726

ebc